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ABSTRACT

A case study explored the composing processes of two grade one students to determine the role of the computer as a learning tool in the first grade classroom. Analysis of the texts of the children's writing and transcriptions of the tape-recorded collaborative exercise in writing and computer use by the children revealed that young children, given a modicum of teacher support, can be allowed to work independently at a computer, where they are able to use their own resources in a collaborative setting to solve their problems of composing and word processing. The children were able to sustain their interest over many 20-30 minute periods of work, exhibited increased text reading and rereading during composition in order to clarify and expand their ideas, and evidenced improved reading enthusiasm as they incorporated a sense of playfulness into their work. Also, the successes of these two students were effectively shared with the rest of the class. Both became resource people able to respond to any who were having trouble at the computer, and their stories served as models for other students to emulate. Findings suggest that the first grade classroom can absorb the microcomputer into its existing structure in a way that enhances the achievement of the children. (Three texts written by the subjects and transcripts of the conversation recorded during the composing process are included.) (KEH)

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# WRITING WITH A MICROCOMPUTER IN GRADE ONE

## A Study in Collaboration

by

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Transcripts of the students' recorded talk and their computer-printed compositions are used with the written permission of the students and their parents.

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WRITING WITH A MICROCOMPUTER IN GRADE ONE

A Study in Collaboration

A GRADE ONE STORY

**once upon a time ther was a little girl she was good and she was nice. one day she was going to the fair, and she went on a lot of rides and she wanted to go on a nather ride but, she did not have aney tickets lateron she got lost she ciride and ciride. she was skird. Some one side up in the stage if you are lost come on the stage. The little girl herd the lade. the little girl went on the stage. She side I want my mommy! and she ciride and her mom came bake and she was happy! And she went on the stage and she sang a soing the soing was cold thaes theing I love. The soing gos like this I love the birds in the trees I love the flowers and bees I love the sky up abob thaes theing I love I love to sing all the day happy and work and to play nihgt bfor sleep and to play thaes theing I love all the peppel cherd. Yaa! the end**

This story of a little girl lost at the fair might not seem too exceptional a composition for a child in the middle of grade one. We can see here a good knowlege of the narrative elements of plot in its clearly-demarcated beginning, complication, and resolution. We can also see the beginnings of character development in the story of the good little girl who wanted more rides than she had tickets for, got lost and broke into tears. The change in the little girl's mood from despair

to relief is signalled by her bravado in daring to sing a song on stage. And the story concludes on a note of triumph when all the people cheered.

What makes this story exceptional at this level is that the writers include the words of the song she sings. This is just the sort of extended detail that adds charm and credibility to the story. It also makes the story much longer that a normal grade one text, although of course it would read more easily if we could see the lines of the song set out in the text.

The writing shows a growing sense of sentence structure in the use of periods and exclamation marks to signal the ends of sentences, while the complete absence of upper case letters is due solely to the lack of familiarity with the mechanics of the computer. Nevertheless, in spite of the lack of punctuation, we can see the child's control of sentences. The spelling also shows mastery of many common words, while such spellings as *a nather* (another), *ciride* (cried), *skird* (scared), or *herd* (heard) indicate their familiarity with phonic patterns. Even such spellings as *lade, side, soing, theing, abob, bfor, peppel, cherd* (lady, said, song, thing, above, before, people, cheered) are not so far off track as to be unreadable.

The story was actually written jointly by two children, who during the first five months of their grade one class had been encouraged to write and share their stories by the teacher, who is committed to using the writing process for beginning literacy. The classroom had just been given an Apple computer and the children were beginning to experiment with a variety of programs, including Bank Street Writer for word processing. When it came to Vera's and Jennifer's turn to use the computer, the teacher challenged them to write a story directly onto the screen.

After giving the children some brief instructions on how to load and run the program, the teacher left them alone to work together. For the next forty minutes the two girls appeared to be absorbed in their task, while the teacher, although occupied with the other students in the class,

was able to observe their activity from a distance. It appeared that the two children had a ball! They talked, argued, discussed, checked, sang, and worked on their story for far longer that ever before. Simply on the evidence of the printed story it would seem that the use of the computer had had a beneficial effect on the children's composing skills.

Conventional wisdom about the value of using a microcomputer for composing would suggest that the children could now revise their "product" to put it all into standard spelling. Zaharias (1983), in her survey of uses of microcomputers for language arts, suggests that technology enables students to "organize, enter, edit, format, and print out" their writings. In this case the students could also be taught the use of the shift key for inserting uppercase letters, and use spacing to set out the dialogue and song lyrics in a more readable format to achieve a publishable story. If the teacher's emphasis were to be focussed on achieving adult standards of surface correctness for the children's writing, the facility of the computer for revising text would provide opportunity for teaching many of the elements of editing skills. Obviously, to publish, then, a grade one student's story that had been polished to achieve surface perfection would provide the class with an approved standard which might be emulated by other students. The achievement would also impress administrators and parents.

## WRITING AND TALKING

But the teacher was more curious about the verbal interactions which were apparently a significant aspect of the children's composing processes. The excitement and enthusiasm which she had observed from afar during the generation of the story seemed to be a far more valuable effect than the actual story which was the end result. Consequently, during the following week she got the children's permission to tape-record their conversation while they composed another story. Altogether, over the next two weeks nearly two hours of the children's talk were recorded while they composed two more stories. The following story is their second effort:

TEXT #2

**BIRTHDAYS**

**ONCE UPON A TIME THER WAS A BIG, GIRL. SHE WAS GOING TO HER FIRRNDS HOUSE. HER FIRND HADE A BIRTHDAY PARTY. EVER ONE SANG HAPPY BIRTHDAY TO YOU! HAPPY BIRTHDAY TO YOU! HAPPY BIRTHDAY DEAR STEPHANIE HAPPY BIRTHDAY TO YOU! STEPHANIE OPENED HER PIRINS SHE WAS HAPPY! THEY ALL AET CAKE. [illegible]ONE HAD A PIRINS. EVERONE WER HAPPY ALL THE PEPLE WENT HOME.**

While this story has some of the same elements and charm as their first effort, it is noticeably shorter. We might suspect that the first story had resulted mainly from the novelty effect of using the computer for composing, and now the children were simply churning out a few sentences to fit the same formula. Fortunately, the tape recording of the children's talk during this composing episode reveals another dimension of language activity that is not apparent in the final print-out. The transcripts, in fact, demonstrate very effectively the truth of Andrew Wilkinson's aphorism that "writing floats on a sea of talk." The tape-recording of this, and a third composing episode, reveals, in fact, the richness of the verbal interaction between the two children and the depth of their knowledge about writing.

If we were only to consider the story, the final print-out or product, as evidence of language activity, we would miss the true value of the time the children spent in these composing episodes. The story, therefore, is merely the tip of the ice-berg, and it is only through the use of the tape-recorder that we can really evaluate the children's use of language.

LANGUAGE USE AND THE COMPUTER

At first, the teacher was interested to find out what were the main areas of the children's concerns during their independent time at the computer. John Dickinson (1986), in his study of

the use of a microcomputer in a first-second grade classroom, had identified three broad categories of talk, as (1) off-task, (2) planning, (3) correction/discussion. For this study, because the children were still struggling with the mysteries of the computer itself, it was necessary to add a fourth category, computer mechanics, to cover the children's discussion of what "buttons" they had to press to manipulate the word-processing program.

The first analysis of the transcripts of the tape-recordings was a simple apportionment of the quanitity of the children's interactions according to these four categories. If the teacher had been worried that the children might have been wasting their time when not under direct supervision, this concern was not justified by the analysis which revealed that off-task talk occupied the least amount of time, somewhat less that 10 per cent of the total. Generally, the off-task talk is in response to an interruption from another member of the class, although there are two places on the tapes where the children drop their voices to a whisper in order to circumvent the tape-recorder.

The other three categories were about equal in balance, about thirty per cent each, although the time spent on learning to manipulate the computer program would presumably decrease as the children become more familiar with the workings of the machine. For the first episode the children composed wholly in lower-case type because they did not know about the upper-case capability of the program. In their second episode the teacher showed them how to switch to upper case, but the children left it on for the whole text. Only in their third text do they show the beginning of control of the shift key for capital letters. In this case, it is clear that the children's ability to process their text is lagging behind their knowledge of the use of capital letters. In addition, there is considerable discussion of how to use the delete and escape keys, and how to move the cursor and save the file.

There is considerable overlap between the categories of composing and correcting when the tape records the children reading or re-reading their text, either individually or sometimes in chorus. In some cases, the voices are following the words as they appear on the screen. In other cases the reading of a sentence or a phrase provides a springboard for the generation of the next idea.

The following transcript of the first four minutes of the tape-recording of the second composing episode shows this complexity in the children's talk, as their story proceeds with painstaking deliberation, creating and following the text letter by letter:

V: Here. Once. O... N... C... E... finger space. . . A...

J: No. U...U..Can't you even see?

V: U ...P...O...N...finger space. Time.

J: A ...Once upon a time.

V: T..I..M..E ? (reads) Once upon a time... Where's M? Where's M?

J: Can't you even see?

V: ..M ...E

J: (reads) Once upon a time ...

V: There. There was a little girl.

J. (giggles)

V: There was a little girl.

J: House!

V: No. There was a little girl. She ...

J: She would do a house, in a haunted house!

V: No, she.. .

Another student (interrupting): Where's the A? We need a A in here.

V: Aw. Get out of here!

J: So?

V: How do you spell there?

J: T.. H.. E.. R.

V: Once upon a time, there ...was...

J: W. .. A ... S...

V: W A S

J: S!

V: Oh!

J: Jeeze! (Chuckles at a mistake)

V: There was a ... A. . . A

J: A little girl . . .

V: No. A big girl...A big girl!

Interruption: Can I ask you something?

V. Shhsh!

J: B..I...G..

V: What do you want "big girl" for?

J: That's a different one.

V: You want a dot [i.e. a period]. That's a sentence.

J: There was a big. Is that a sentence?

V: You have to put . . .

V & J (in unison, emphatically): G..I..R..L..

## PLANNING AND CORRECTING

The tape-recording shows that Jennifer and Vera needed 4:19 minutes to compose the first sentence of nine words, not a big achievement if measured only by the words on paper. Yet the above transcript shows that the two children also discussed spelling, punctuation, and the

keyboard, as well as participating in decisions about the story-line. We can guess that they choose a *big* girl for this story in order to make a change from the *little* girl of the previous story.

During the next few minutes the two children almost unconsciously give direction to the story. At first, the big girl seems to have been going to school. There is an attempt to spell school, and then, as if by agreement, the two authors have her going to her friend's house. There is now an established routine of turn-taking. One child says the next word to be typed, the other spells out the letters, and one or the other re-reads the sentence as it apears on the screen. The word *friends* presents a new problem in writing mechanics:

V: (spelling the word as she types ): F...I...R...N..

J: . . . her friend's. . .

V: Friend's?

J: Yes. Put S. Friends! (emphasizing the /z/ sound of the possessive S) Her friend'zzz house.

V: We have to put "a-postrophe." Is there "a-postrophe" round here?

J: Put S.

V: (to the teacher) How do you put a-postrophe? (no answer from the teacher busy talking to another group) You have to put a-postrophe first.

J: Where's apostrophe? Here?

V: No, that's a dot.

J: Oh, just leave it.

## AWARENMESS OF WRITING CONVENTIONS

Another segments of the tape show the children's awareness of many of the standard conventions of writing and phonics. For example, they discuss how the letters P and H make the

sound of /f/ in the name, Stephanie, that they had chosen for their character. Other comments reveal the children's knowledge of many elements of written language:

**Sentence ending:**

J: We have to put a dot there because that's the end of the sentence.

**Plural -S :**

J: You have to put -S . . . presents. . . at the end.

**Verbal Endings:**

V: .. I..N..G... Playing.

**Verb Agreement:**

J: Her family ... later on her family were . . .

V: (correcting her) WAS.

J: Her family were . Her family was playing school.

V & J: (in unison): Ohhh! WERE. Her family were!

**Pronoun Reference:**

J: Her family were playing school.

V: They . . .

J: Hey! Who's they? Her family were playing school.

**Word Choice:**

J: Everyone sang . . .

V: Everybody sang . . .

J: Everyone?

V: Everybody?

J: Everyone sang.

**Exclamation Marks:**

V: Can we make a dot and a question mark?

J: Not a question mark.

V: We're making it loud and putting it at the end of the sentence.

DECISION MAKING

There is very little discussion about such choices. Rather, it is a case of each girl sounding out her choice. Sometimes, as in the case above, there seems to be a concensus of opinion; other times it seems that the one actually at the keyboard has the final say.

For the title of the story the children are forced into making a choice because of the necessity of labelling the disk file for the word processing program. The following example is unusual because in this case Jennifer actually gives a logical reason to support her choice. As we can see from the finished story, the "big girl" who is the central figure of the story is not the celebrant of the birthday, and it would have been a mistake to call it "Her Birthday." So the children avoid the issue by chosing the more general title "Birthdays":

J: The title's going to be "Birthdays."

V: Let's just make it "My Birthday."

J: Let's just "Birthdays" 'cause it's not the girl's birthday. It's her friend's.

How the name "Stephanie" arrived into the story is a mystery. In the first part of this composing episode, the two girls work continuously for 28:30 minutes, until the buzzer sounds for recess, when they had reached the point in the story where the children sing "Happy Birthday to You." After returning from recess "V" says: "We must read it first," and the next few minutes of the tape are punctuated by the girls' singing, first the individual letters, and then the song itself, up to the point of "happy birthday to you, happy birthday to ...." One of the girls adds "Stephanie" as a *fait accomplit*, which may suggest that the composing process may have continued during the recess, when this name had occurred to the two authors.

COMPOSING AND RE-READING

The printed transcript of the children's dialogue scarcely does justice to the excitement and enthusiasm shown by these writers. The tape-recording shows very clearly how their interest was sustained over a thirty-minute period, and, even more surprisingly, how the momentum of composing was picked up again immediately on their return to the classroom after recess. The tape-recording is enlivened by the repeated readings and re-readings of the text, sometimes individually, at other times in unison. For example, when after 7:45 minutes of effort the two authors have finally nailed down the first two sentences, there is a definite note of triumph as they both loudly chant their text.

The Happy Birthday song included in this story may be a repetition of the success of having a song in their first story. When they decide in their text that everyone at the party would sing Happy Birthday, they both spontaneously break into the song. At that point the school buzzer signals recess, and the children have to save their text file before leaving the room. After recess, they come back to the computer and re-read the text, continuing then to add the words of the song. Throughout this segment of the tape the composing pattern, established earlier, of saying words and spelling out sounds is accompanied by a constant singing of the refrain of "Happy Birthday." Finally, when the story is finished, they both sing the whole song together as a grand finale to the whole composing session.

There is one point in this composing of this story when it seemed that the plot line would include an episode about school. Jennifer suggests that the children at the birthday party could be playing school. However, this lead gets lost in the attention given to the singing of Happy Birthday, and the children drop this theme. However, the following week, the same two children have another turn at the computer, and interestingly, the school theme surfaces again in their third story.

**Text #3**

**One day ther was a samirte Girl, it was her firste Day of school. she lirnder what 1+3 was. and she lirnder what 10+10 was. and she lirnder what 10+1+2 was and when she went home she was happy. and leattle on her Famalae wir playing school and her mother was the techer. and her dad was the principal. and her sistir was the Muscke techer and her mother . . . .**

The above text was the end result of the third composing episode which stretched over three sessions of twenty minutes each. If we examine only the printed text, we might assume that there had been a slackening of the children's effort, perhaps a loss of their interest and commitment. The beginning is promising. We can see that the authors have found an alternative to the "Once upon a time" formula, and the girl, first "little," then "big," is now a "smart girl" beginning grade one, as if they intend to tell a story about real life in school. The maths problems add to this sense of realism, and the story could end quite neatly, if very briefly, with her going home happy. But the text carries on with the transposing of the same story into a play situation and then fizzles out disappointingly as if the children had got bored of the whole thing.

Only by listening to the tapes of their composing talk and examining the transcripts can we see the real evidence of the children's writing abilities. At the beginning of this session the teacher showed the authors how to use the shift key for upper case letters (converting "small" letters to "big"). More significantly the children also learned how to delete chunks of text.

The first few minutes of this session seem to be a repetition of the first composing experience with the spelling out of the letters O..N..C..E. Their respective roles seem to have been

accepted, with Vera at the keyboard and Jennifer giving directions. Now that the children have learned the use of the shift key, Vera questions at the beginning of almost every word whether there should be a big or small letter, until they decide that everything is going to be "in small." After 4:20 minutes the following conversation takes place:

J: There was a little . . . .

V: Kitten!

J: What?

V: There was a little kitten.

J: Girl!

V: No... I don't know . . .

J: Can't. . . kitten.

V: Yeah, I know what ...

J: There was a little kitten

V: O.K.

It then takes the children another two minutes to decide how to spell "kitten," until having asked the teacher about the ending, Jennifer exclaims triumphantly: "I knew it! I could spell it."

After that promising start, the children get bogged down in the mechanics of the computer, and manage only to get as far as choosing the kitten's name, until finally after nearly fifteen minutes they erase the whole text and make another start. Jennifer goes back to their familiar formula: "Once upon a time there was a smart girl." Then there is another distraction as they wrestle with the problem of deleting the letter within the curser. Jennifer justifies her role in the composing team with the statement: "I'm better than you because you just press buttons but I help you spell--you copy whatever I say," before they continue with the typing of the text. Jennifer

makes the suggestion: "There was a smart girl. One day she was going to school...," and Vera adds: "And she got lost." To which Jennifer replies: "No." But Vera is at the keyboard and she types: "It was her first day at school," which is the extent of their text when the buzzer rings for recess after twenty minutes of composing, when they save their text file.

On their return from recess the two authors pick up their theme immediately. Jennifer reads: "It was the first day of school," and adds: "She knew what is 1 + 1 and we're going to use pluses and then . . ." Here Vera makes an interesting change in wording by suggesting "Learned! She *learned* what 1 + 1 was." After they have added this text, they continue the math idea with the sentence: "And she knew what 10 + 10 was," excitedly calling the teacher's attention to the fact that "there's adding in this story." This new idea seems to provide a new impetus to the story. Jennifer suggests: "And she knew pluses and minuses." Vera counters with: "No, she *learned* what . . ." Jennifer adds "What 3 minus . . .."

But at this point Jennifer has to go to the washroom and Vera continues working alone, reading the text: "One day there was a smart girl. It was her first day of school. She learned what ten plus ten was and she learned what ten plus one plus two was."

So, after two false starts, making use of their ability to delete the whole text, they have finally created a story which ends with the smart girl going home happy. Composing four sentences with a total of 39 words has taken them forty minutes at the computer.

Although the story might seem to be finished the two children return to it the next day by continuing with the play-school theme that had surfaced during their first composing episode. The math theme is picked up again with the girl's mother as teacher:

V: Are we finished?

J: No-oo. Her mom said, "What is 100% of 200?"

V: Oohh! That's a hard one. She's *only* in Grade One, man!

So the story peters out with the two authors adding other members of the family as new characters in the school play, but without returning to the math questions, until after another twenty minutes the session is ended by the buzzer, leaving their story unresolved.

## DISCUSSION

Perhaps the most encouraging lesson to be learned from this examination of the texts in conjunction with the transcripts of the children's talk is the degree of perseverance that these two six-year old girls showed in composing their stories. It is remarkable that they were able to sustain their interest and enthusiasm over many twenty-to-thirty minute periods of work, stopping only at the command of the school buzzer, and able to resume their activity immediately on return to the classroom. To some extent this momentum may be the function of the novelty of being able to use a computer for the first time. Yet, working against this effect were the difficulties that the children encountered in manipulating the word processing program. Even during the later sessions a considerable portion of their talk was directed towards solving problems of text processing. And throughout all the sessions the creation of meaning in their text is hampered almost equally by the hunt for single letters, either as part of the standard spelling or for their physical location on the keyboard.

It is also enlightening to hear the amount of text reading that takes place during composition. The teacher remarks that one of the difficulties in teaching these same children the processes of written composition with paper and pencil is that while they were quite happy to be getting ideas onto paper, they would rarely reread their text to check for sense and continuity. With paper and pencil it seems that getting the message down on paper is the end of the process; with the computer the children continually read and re-read the screen in order to clarify their

ideas, and to provide a platform for the next thought to be added. A similar effect was noticed by Phenix and Hannan (1984) in their case-studies of grade one writers with a computer.

Another effect which is particularly noticeable when listening to the tape-recordings is the sense of playfulness apparent in their readings. The tone of these readings varies considerably. Sometimes, they both chant the text as a means of bringing a sentence to a conclusion; other times one of the students will read with exaggerated expression, or will read to the end of a passage, stopping on a note of query, as an invocation for the generation of the next idea.

Singing and word-play are both important in these writing episodes. The first text, of course, contained the story that the character sang from the stage. We can assume that they both sang this song while they were composing the text. Certainly in the next episode the singing of Happy Birthday over and over again shows how writing becomes a form of play for these children. The third text contains no song, but the word *when* produces the letter combination H..E..N.., which then generated some word-play on hen and henky-penky, while at another point they play with Lucky-ducky, ducky-lucky, goosey-loosey, lucky-ducky, rooster-mooster, etc.

As Genishi, McCollum and Strand (1985) found in their study of kindergartners using LOGO in a computer laboratory, the children were "lively, enthusiastic and sociable," and it appears that the use of a computer provided as richly an interactional context for language development as any other of the more traditional kindergarten activities.

The differentiation of the two children's roles in the composing process is interesting. The two were chosen to work together because they were friends, but not "best friends," yet both showed some ability to work independently. Jennifer is seen as the more imaginative, spontaneous child, always ready to fly with an idea. Vera, on the other hand, is more of a determined plodder. At the computer the two personalities seemed to complement each other, with Vera taking the

main responsibility for managing the keyboard while Jennifer contributed her ideas and helped with the spelling, although in the actual direction of the story both girls seemed to share control of the story equally. Judith Newman (1988) notes that such collaborative activity seems to be an inevitable function of the computer lab, when students, at whatever age, will always be found to "be engaged in conversation," and "helping one another."

The collaboration between the two children was also a function of the situation in which only one computer was available. In his study of the impact of a computer on a first/second grade classroom, David Dickinson (1984) also noticed that the computer put "different commnicative demands on the children," forcing them to talk about their writing and respond to each other's ideas. So, too, does Colette Daiute (1985) in her review of studies "on the social effects of using computers in writing classes, conclude that "recent research has shown that the computer can be used to change the communication patterns in the classroom," and that as a writing instrument it "could significantly increase collaboration."

An interesting sidelight to this study is that both of the children, being from immigrant families, were designated as ESL (English as a Second Language), as each of them speaks a different language at home. Yet the tape recordings show that they are both now fully fluent in English, and there are no signs in the transcripts of any lack of English idiom or any first language interference.

There are two carry-overs from the normal paper-and-pencil writing program in the classroom. In the middle of one of their writing sessions Vera says: "I wish I could draw a picture there again." One of the disadvantages of using the computer for first-drafting may be that it takes away the opportunity provided by drawing for an alternative mode of expression of the story and characters. Drawing may also provide a form of "rehearsal time" when ideas can be articulated for subsequent transcription, but in this case Jennifer sees the drawing as a form of reward, when at

the end of their composing she says: "She's (the teacher) going to print; then we can draw." The children were also accustomed to the oral sharing of their writings; so when Vera asks of the teacher: "After we do our story can we draw a picture, can we draw a picture?" Jennifer counters with: "No. Can we tape the story and we can tell . . ." Nevertheless, both the children clearly impressed with the print-out from the computer, and their excitement can be heard on the tape at the conclusion to the composing episode:

J: We want two copies. Just wait, we're going to do this.

V: You're a good writer!

J: Holy! It's copying it! It's copying it!"

## CONCLUSION

There is no doubt that having the transcriptions of the children's talk while they composed, has led us to a much greater understanding and appreciation of the children's writing abilities than would be possible from simply an examination of their printed stories. Listening to the children's comments, questions, suggestions, and exclamations enables us to realize that the children bring a great knowledge about the process of writing into their work.

This study was valuable for the insights which we gained about the composing processes of the two grade one students. Yet just as important is what we learned about the impact of the computer in the classroom. In fact, the way the children adapted to the availability of the computer is most encouraging for any teacher, especially one who may be somewhat intimidated by computers generally, and especially by all of the high-tech jargon with which we are bombarded in the media. The most important lesson learned here is that a single microcomputer could be introduced into the classroom and put to valuable use without any complicated training or drills in a computer lab. The teacher, in this case, sees herself as a learner along with her students, and together they were able to make the word-processing program work for them.

The computer has, in fact, become accepted as another learning tool in the classroom. Jennifer and Vera's experience shows that young children, given a modicum of teacher support, can be allowed to work independently at a computer, where they are able to use their own resources in a collaborative setting to solve their problems of composing and word processing. There seems to be a stage in the development of the emergent writer where the child, having become familiar with the letters of the alphabet, is beginning to make the transition from what Gunderson (1989) terms the "phonetic writer" into "the transitional writer," and may be ready to try writing experiments with the help of a computer.

As Vera and Jennifer's successes were shared with the rest of the class, their stories became models for other students to emulate, and they became known as "helpers," or resource people able to respond to any who were having trouble at the computer. Moreover, the teacher is beginning to find other uses for it, particularly in her language experience group activities, as described by Smith (1985) and Grabem and Grabem (1985). With a 20-column large print format she is able to compose a text directly onto the screen from the children's contributions. This text is then printed out and becomes valuable material for the children's reading development. As more of the children become adept at using the computer for text creation, then it may be possible to set up some sort of mail system, as described by Bruce, Michales, and Watson-Gegeo (1985), by which the children can communicate directly with each other.

With the advance of technology, the addition of a microcomputer and printer is within the reach of most classrooms. Yet it is important not to fear the introduction of a computer as a monster which is going to disrupt the program. The lesson here is that this classroom was able to absorb the microcomputer into its existing structure in a way that enhances the achievement of the children.

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